DOCUMENT RESUME

ED 172 296 CS 502 557

AUTHOR Putnam, Linda L.
TITLE Procedural Messages in Small Group Interaction.
PUB DATE Apr 79
NOTE 35p.; Paper presented at the Annual Meeting of the Central States Speech Association (St. Louis, Missouri, April 5-7, 1979)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS Communication Problems; Communication Skills; *Group Dynamics; Group Relations; *Interaction; *Interaction Process Analysis; *Organizational Communication; Research; *Task Performance
IDENTIFIERS *Communication Research

ABSTRACT

Three studies were conducted to ascertain the relationship between predisposition for group work climate and the types of procedural messages that group members employ. In the studies, expectations about group work procedures fell into two categories: high procedural order (HPO) and low procedural order (LPO). Each category consisted of four properties. For HPO the properties were use of planned, sequential patterns for organizing tasks; concern for time management; an emphasis on regular procedures; and an emphasis on clarifying procedures. The four LPO properties were use of chain-association patterns for developing ideas, flexibility in establishing and changing plans, oblivion to time constraints, and vacillation between task and socioemotional issues. Individual expectations for group work climate were derived from scores on the Group Procedural Order Questionnaire (GPOQ). In the first study, analysis of interaction across six small-group meetings demonstrated that HPO subjects initiated HPO statements, while LPO subjects generated socioemotional ones. In the second study, HPO subjects surpassed LPO ones in their use of procedural clarification acts, their application of goal-related statements, and their reliance on general headings to introduce new topics. In the third study, LPO subjects employed a high frequency of interruptions, multiple-conversations, and topic changes, whereas HPO members produced messages that pertained to agendas, lists of alternatives, and task deadlines. (PL)

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PROCEDURAL MESSAGES IN SMALL GROUP INTERACTION

Linda L. Putnam

Department of Communication

Purdue University

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Submitted to

Communication Theory Interest Group

Central States Speech Convention, April, 1979

CS502557

PROCEDURAL MESSAGES IN SMALL GROUP INTERACTION

The small task-oriented group is a popular and essential unit of most organizations. In an age of specialization and delegation of task functions, small groups serve as project teams, coordinating agents, clearing houses and decision-making bodies for a wide array of tasks. In order to work efficiently and satisfactorily on a project, group members must concur on the modus operandi for organizing and planning their task endeavors.[1] To this end, participants in a zero-history group frequently barter and negotiate their diverse expectations about how the task should be handled and when stages of the project should be completed. This investigation centers on the expectations members have about small group work climates and the way individuals manifest these predispositions in their verbal messages.

In many instances, groups employ agendas and prescriptive procedures to organize task discussion and to determine how the group should proceed. Dewey's reflective-thinking pattern and the Kepner and Tregoe model of rational management are two such prescriptive methods.[2] These rational approaches for organizing a task incorporate a series of largely discrete steps which in formal organizations may be known to all group members in advance of their discussion.

Laboratory research on the productivity and member satisfaction of groups that employ such prescriptive models has yielded inconclusive findings.[3] Moreover, field studies on group process reveal that some members think group meetings are inefficient, unproductive and waste too much time.[4] It appears that in some groups 'agendas don't work' and groups 'don't progress via step-by-step procedures.'[5] It seems plausible

then that some groups adhere to preset methods of work, while others alternate between a variety of approaches.

Theoretical Rationale

This investigation of group work climate follows the assumption that members bring with them to a group setting an implicit cognitive plan for structuring work activity. That is, when people enter a new group, they bring expectations about work procedures which they find comfortable or which they have employed in other similar groups. These expectations presumably affect interaction among members and shape uniformity in work habits. Once work procedures become routinized within a normative climate, they exert pressures on members to conform to group norms and subsequently govern the acceptability of message patterns within the group.[6] Hence, knowledge of member expectations for small group work climates may aid researchers in tracing work norm development and in understanding the impact of work climates on group cohesiveness and productivity.

Small Group Work Climates: Categories of Procedural Messages

In this study expectations about group work procedures fall into two categories, High Procedural Order (HPO) and Low Procedural Order (LPO) with four corresponding properties in each category. The four properties of HPO are: 1) use of planned sequential patterns for organizing task activities, e.g., following an agenda, listing ideas, assigning priorities to alternatives; 2) concern for time management, e.g., setting deadlines for completion of tasks, establishing and adhering to timetables; 3) an emphasis on regular, predictable procedures, e.g., use of summaries at the end of meetings, regularity in place and time of meeting; and 4) an emphasis on clarifying procedures, e.g.,

using signposts at the beginning of meetings, reminding the group to adhere to the task, moving the group forward on the agenda.

The four properties of LPO are: 1, use of a chain-association pattern for developing ideas, e.g., jumping from point to point, kicking ideas around without a clear purpose; 2) flexibility in establishing and changing plans, e.g., adopting a schedule but dropping it when the group misses the first deadline, making a decision but reconsidering it at the next meeting; 3) oblivious to time constraints, e.g., procrastinating deadlines, socializing without keeping an eye on time remaining; and 4) vacillating between task and socio-emotional issues, e.g., interrupting work process to pursue social issues, generating multiple conversations within the group, discussing off-topic themes while simultaneously working on task matters.

Purpose of the Study

This investigation attempts to ascertain the relationship between predispositions for group work climate and the types of procedural messages that group members employ. Individual expectations for group work climates are derived from scores on a standardized inventory, the Group Procedural Order Questionnaire (GPOQ). The GPOQ is a seven-point Likert scale which consists of thirty-two items that discriminate between individuals who prefer tightly structured, sequential procedural climates and those who prefer free-wheeling, free-associative message patterns for working on a group task.

The thirty-two items on the GPOQ (16 HPO and 16 LPO) yield moderately high homogeneity of items with item-score correlation coefficients above .30, $p < .001$, $N = 114$ and high discriminatory power as determined

by a t test on each item between the mean item scores of subjects in the top third of total scores and the mean item scores of subjects in the bottom third of total test scores. The instrument demonstrates an internal consistency coefficient of .87 as determined by Cronbach alpha and a test-retest reliability of .69 for a ten-week interval. Alternate form reliability for the 116 subjects who took the questionnaire within a 12-to-14 day interval is .75.

Putnam reports on three studies with a total of 850 subjects that support the content, criterion and concurrent validity of the GPOQ.[7] This investigation focuses on the predictive validity of the instrument, in particular on the capability of the GPOQ to predict procedural messages of HPO and LPO group members. More specifically, this paper summarizes results of three investigations of interaction patterns in HPO and LPO groups. The first study concentrates on the development of work habits during the first six meetings of two zero-history groups. Thus, it centers on the frequency and type of procedural acts which characterize the work climates of an HPO and an LPO group.

INVESTIGATION #1

Hypotheses and Procedures. In the first study, three hypotheses were posed: 1) the HPO group would employ significantly more procedural messages than the LPO group, whereas the LPO group would produce more LPO messages than would the HPO group; 2) both groups would use more procedural messages in earlier than in later meetings; and 3) the HPO group would involve more members in discussion of procedural messages while the LPO group would include more members in interactions which vacillated from task to socio-emotional issues.

The first hypothesis is predicated on the belief that predispositions about behavior affect the way members interact with one another. That is, if a person expects a group to use an agenda, to set deadlines, and to adhere to task-related discussion, he or she would initiate or support or expound upon messages which embodied these requests. Similarly, if an individual prefers work climates characterized by flexibility in the use of procedures and a tendency to jump from one idea to another, he or she would generate a message system which reflects these predispositions.

The second hypothesis stems from previous findings that procedural themes are more prevalent during the first three phases of a group's interactions and gradually decline in overall frequency from the third to the sixth phases.[8] In effect, discussion on how a group should proceed is more critical in the early stages of a group's development. A rationale for the third hypothesis is derived from the relationship between member participation and satisfaction with the group,[9] i.e., more members would participate in group discussions on issues which provide them with a sense of comfort and self-fulfillment within the group.

Subjects for this study were students in a small group discussion class who were assigned to five-member ad hoc committees based on their GPOQ scores. Members of the HPO group scored one standard deviation above the normative mean while members of the LPO group scored one standard deviation below it.[10] The ad hoc committees met once a week in a one-hour session to plan panel-forum presentations on policy issues. Interaction during the first six sessions of HPO and of LPO groups were audiorecorded; thus researchers coded twelve one-hour sessions of group

discussion. In addition, group members kept journal accounts of each meeting and wrote case studies on leadership, cohesion, task norms, social tensions, and shared fantasies of their respective groups.

The category system for analyzing procedural messages involved a two-step process. First, the coders determined whether the message unit fit into an HPO or into a LPO category based on the characteristics of these concepts and secondly, whether only one or possibly several properties of these headings were embedded in the message unit. A complete thought pattern on a particular topic constituted the unit of analysis for this study. Thus, when the topic under discussion shifted from content to procedure, procedure to content, or content to content, coders classified message unit into an HPO or LPO category and then determined the properties of that unit. Since properties, unlike category headings, were interdependent, coders could assign as many as four properties to each category label.[11] This category system, although cumbersome and admittedly exploratory, was isomorphic with the GPOQ and thus considered a better system for this study than other standardized category schemes.

Scott's Pi reliability coefficients between the two coders was 84% for the general category headings, HPO and LPO, and 69% for assignment of category properties. A lower reliability coefficient for the property designation reflected problems in classifying message units unto overlapping properties.

Findings. As predicted, the HPO group used significantly more HPO than LPO message units ($X^2 = 6.27$, df = 1, $p < .01$, HPO = 87; LPO = 43). But both groups employed an equivalent number of LPO messages (HPO = 59; LPO = 58). Inasmuch as LPO groups contributed more LPO messages in four of the six meetings, this similarity in frequency of LPO messages might

conceal an imbalance between LPO and HPO groups in the regularity of procedural message usage. Yet, in effect, the first hypothesis was confirmed for HPO messages but not for LPO ones.

To test the second hypothesis, the investigator collapsed procedural statements into three phases--early, middle and late. The distribution of procedural messages across these time periods failed to support the second hypothesis in that members of both groups contributed a parity of HPO statements and a disparity of LPO acts from one stage to the next (HPO, E = 51, M = 51, L = 44; LPO, E = 48, M = 30, L = 23; $X^2 = 4.05$, df = 2, $p < .13$). In essence, the frequency of HPO contributions remained relatively constant from one time period to the next while the number of LPO statements gradually declined from the earlier to the latter sessions.

Further analysis of message usage across time periods revealed a significant difference between HPO and LPO contributions in the forth meeting. HPO members presented 78% of the 30 HPO messages in this session whereas LPO members contributed 63% of the 21 LPO messages offered in this meeting ($X^2 = 6.93$, df = 1, $p < .009$). In general, distribution of HPO and LPO messages between the two groups during the other five meetings adhered to similar patterns but the proportional differences were not as pronounced as they were for the forth meeting.

Different operational definitions of procedural statements may account for the apparent discrepancy between the results of this study and those of previous research on procedural themes in stages of group development. Since this investigation posited a broad yet specific definition of procedural contributions and past research operationalized procedures as messages about the mechanics of planning,[12] it was probable that a wider range of acts was incorporated into the general category of HPO than was

included in categories labeled 'procedural themes.' The researcher found some support for this assumption in the analysis of HPO properties. That is, HPO members initiated more statements which attempted to organize or structure the group's activities during the first three meetings than in the last ones. In effect, messages which promoted planning and sequential activity were offered more frequently in the initial group sessions but HPO messages in general were more prevalent in the latter discussions after work habits became somewhat stable and repetitive.

The number of members who participated in the discussion also affected the frequency and type of procedural messages for both groups. As predicted, five-member participation in the HPO group produced a significantly higher percentage of HPO than LPO messages (78%, HPO = 29, LPO = 4). In contrast, LPO groups initiated more LPO than HPO messages when five members were involved in the interaction ($X^2 = 8.96$, df = 1, $p < .003$). However, the largest number of LPO acts occurred during three rather than five-person interaction for LPO groups. The number of individuals involved in the discussion had a significant affect on the proportion of procedural messages in HPO and LPO groups for only five-member, not one through four-member interaction; thus the third hypothesis was supported.

In addition to testing the three hypotheses, the investigator conducted exploratory research on the properties of HPO and LPO messages to determine differences between HPO and LPO groups in the use of these properties, relationships between each property and the number of members who participated in the interaction, and associations between the frequency of properties and the time periods in which they occurred. Table 1 summarizes overall frequencies, percentages, and chi-squares between HPO and LPO groups for the eight properties.

Since coders could assign more than one property to any single HPO or LPO message, interpretation of differences between these message types among the properties or between the categories was not a meaningful procedure. However, a comparison between HPO and LPO groups on each property seemed within the limitations of interdependent categories.

Of the eight properties of procedural messages, HPO and LPO groups differed significantly in their use of two of them. planned, sequential patterns for organizing task activity and vacillation between task and socio-emotional activity. As Table 1 illustrates, the HPO group generated more procedural contributions characterized by planned, sequential activity and the LPO group produced more comments which vacillated from task to socio-emotional issues. Moreover, 41% of statements on planned, sequential activity were produced by interactions among four and five members of the HPO group ($X^2 = 6.54$, df = 2, $p < .04$).[13] These messages also clustered into time frames with HPO members initiating more attempts to organize and structure the group during sessions one through three than in the latter group meetings ($X^2 = 9.33$, df = 2, $p < .009$).

Furthermore, HPO members clustered statements which vacillated from task to socio-emotional activity in the fifth and sixth meetings whereas LPO members dispersed such messages evenly throughout the series of meetings ($X^2 = 25.39$, df = 2, $p < .001$). In the main, HPO group members initiated planning and structuring messages which stimulated interaction among more members and which emerged during the first three rather than the latter meetings. LPO members, on the other hand, contributed more statements which vacillated between socio-emotional and task information than did HPO group members.

Two other properties also demonstrated a significant relationship with member participation and meeting sequence. Both HPO and LPO groups employed a chain-association or cyclical pattern of organizing group activity in the first and second than in latter meetings (HPO group, $X^2 = 7.69$, df = 2, $p < .02$; LPO group, $X^2 = 7.28$, df = 1, $p < .02$). Perhaps brainstorming and other circular patterns characterized the initial stages of work habits for both the HPO and the LPO group. But for the LPO group, more members were involved in the development of these cyclical patterns ($X^2 = 6.76$, df = 2, $p < .03$). Another LPO pattern was a propensity to give messages which showed flexibility in establishing and changing plans in meetings one through four, but not in the latter sessions ($X^2 = 6.25$, df = 2, $p < .04$).

In total, this investigation of procedural message usage in an HPO and a LPO group led to these distinctions: 1) HPO group members produced more HPO messages than did LPO members, particularly during the forth meeting and during five-member participation; 2) HPO members initiated more messages geared to plan and to organize task endeavors than did LPO members, especially during five-member participation and during the first three sessions; 3) LPO members generated more LPO statements than did HPO members during the forth meeting and when five members were involved in the discussion; and 4) LPO members offered more comments which vacillated between task and socio-emotional issues throughout the six meeting period.

Journal entries and case studies submitted by the ten participants reinforced these empirical distinctions between the HPO and the LPO groups. HPO members commented that their group worked from an agenda, took notes during meetings and read them back at the next meeting, and

set deadlines for compiling data and completing other tasks. One person remarked that she felt a need to see if group members were moving in the right direction and if they were abreast of their time schedules. Others noted that when digressions occurred, one member admonished them to return to the task by reminding the group of time limitations. Every member, however, served as a watchdog to keep the group focused on the agenda. The HPO group had one chronic disagreer whose tendency to make repetitious, off-topic comments made him unpopular with other members. Despite this problem, HPO members described their group as 'cohesive, efficient, and the most effective group in class.'

LPO group members also developed a set of work norms, although these work habits differed radically from those of the HPO group. Flexibility and tolerance governed the norm structure for this group. Members noted that absenteeism was overlooked, lateness was common, and laxity an accepted practice in the group, with the exception of meetings immediately prior to group presentations. In effect, procrastination characterized the group's work habits until members felt pressured to produce.

During the procrastination stage, members skipped deadlines without retribution from others, frequently changed topics in mid-stream of a discussion, and pursued more socio-emotional than task-related topics. This pattern of procrastination and flexibility was apparent in the description of group activity of each meeting. The first journal entry noted that the group planned what they wanted to accomplish during the next meeting; the second one emphasized postponing decisions until the next meeting; the third one indicated that the group discussed an agenda for the next session, etcetera. Thus, LPO work norms were not devoid of

procedural issues but dealt with these matters in an atmosphere of flexibility and free-wheeling exploration of ideas.

At first these habits bothered several members but as work norms solidified and as the group accomplished its tasks within this norm structure, LPO members expressed overall satisfaction with this work climate. In fact, they described their group as 'highly cohesive, fun, unique, and in general, the most successful of any of the other groups.'

Discussion. Since this investigation did not include quantitative measures of productivity and satisfaction, the researcher cannot verify whether group members were indeed productive and satisfied with their group experience. Nevertheless, journal entries and case studies disclosed that members perceived their respective groups as effective, productive, and satisfying. But only the HPO members employed efficiency as a description of their group's endeavors.

On the whole, information from case studies and journal entries reaffirmed the conclusions drawn from analysis of HPO and LPO messages in group interactions. HPO members employed agendas, summarized interaction, took notes during meetings, developed timetables, and adhered to the task business whereas LPO members, who also constructed agendas and set deadlines, developed these procedures within a climate of flexibility and fluctuation between task and socio-emotional needs.

This pattern of postponing decisions and ignoring established procedures provided an explanation for the abrupt decline in flexibility messages of LPO members after the fourth meeting. That is, since groups were scheduled to make their first panel presentations during the sixth week, the pressure to organize the group was more intense during the

fifth and sixth meetings; thus LPO members felt pressured to produce and required that members structure their endeavors.

In contrast, HPO members appeared more task motivated in earlier than later group sessions. Messages which promoted planned, sequential activity occurred frequently in the first three meetings and even though members continued to generate a substantial number of HPO messages during the last two sessions, they also increased the number of statements which moved the group from task to socio-emotional issues. Hence, the HPO group, as one member observed, worked through ideas in initial meetings and socialized more during later stages of group process. While message patterns in this study paralleled expected behaviors of HPO and LPO members, the use of a small sample size and of an untested category system limited interpretations of these findings. Moreover, the category system, though isomorphic with the GPOQ, provided only a modicum of information on the molecular message patterns that distinguished HPO work climates from LPO ones.

Investigation #2

Procedures. Thus, a second study was conducted on three HPO and three LPO groups. The unit of analysis in this experiment was an uninterrupted utterance or a complete contribution by one member. When a contribution contained several sentences of different category types, coders were instructed to select the one which seemed to direct subsequent message patterns.

For this study, a unidimensional category set was developed based on a typology of procedural statements. Table 2 presents this category scheme with frequencies, means, and t-values for differences

between HPO and LPO groups. The ten categories were gleaned from items on the GPOQ and from other coding systems which included a procedural category. Suggestions about how the group should conduct its business, e.g., list or rank alternatives, write down information, outline ideas, and use agendas and set deadlines for completion of tasks, were clustered into one category. Statements which clarified, summarized, or emphasized procedural issues, e.g., remarks about the goal or purposes of the group, attempts to summarize or integrate contributions, and presentation of a signpost at the beginning of a meeting, formed a separate category.

The development of a coding schema which focused on individual utterances generated more HPO than LPO categories because one set of LPO patterns centered on group responses to procedural action, e.g., the group adopts a schedule but drops the idea when they miss the first meeting; or were aimed at message structure, e.g., the group jumped from point to point without transitions or links between topics.[14]

In an attempt to tap these chain-association patterns, I generated two categories which represented the ways HPO and LPO groups initiated topic changes and two which focused on the duration of these initiated changes. It seemed that chain-association patterns developed from switching topics without providing summary comments or without offering a category label or general heading to signal a topic change while procedurally organizing the discussion.

For example, if a group was planning a party and the members initiated topic changes by moving from one issue to another via general headings, e.g., time, place, refreshments, entertainments, this pattern would represent HPO behaviors. In contrast, if group members developed

their discussion by bouncing ideas around the group and switching topics through the use of specific rather than general headings, e.g., "We can get a sixteen gallon keg for about forty bucks," followed by, "I think we should spend about ten dollars on sandwiches and munches," this pattern would represent LPO chain-association activity.

Two categories centered on continued discussion of topic changes; one initiated by general headings and one by chain-association patterns. The author felt that HPO members would expound at length upon one topic before introducing another subject while LPO groups would change discussion themes frequently. Thus coding of categories required consideration of preceding statements as well as assessment of abstraction levels within each contribution.

In addition to classification of topic changes, the investigator added one category for statements on division of labor or messages about task implementation. Even though this procedural activity was excluded from the list of best items on the GPOQ, it was internally consistent with other items but did not distinguish between HPO and LPO subjects. It is assumed then that both HPO and LPO groups use these language patterns to accomplish their respective tasks.

Subjects for the second investigation were 30 students from graduate and undergraduate management classes; 15 who received scores one standard deviation above the normative mean and 15 who obtained scores one standard deviation below the mean. Students were randomly assigned to three, five-member HPO groups and three, five-member LPO groups to work for one hour on either a structured or an unstructured task.

An independent sample of fifty subjects employed a seven-point scale to rate the two tasks on Shaw's categories of task structure--

solution multiplicity, goal-path multiplicity, and decision verifiability.[15] The structured task received ratings in the predicted direction on two of the three variables (solution multiplicity, $t = 2.03$; goal-path multiplicity, $t = 1.97$; and decision verifiability, $t = .44$). The HPO groups received two structured and one unstructured task while the LPO groups worked on two unstructured and one structured task. Group interactions were audio-recorded and transcripts of each group's discussion were prepared. Scott's Pi reliability coefficient for the two trained coders was .76 for both tasks, a figure above the minimum acceptance level of .70.[16]

It was predicted that HPO groups would use significantly more messages in categories 1, 2, 4, 5 and 6 while LPO groups would employ more statements in categories 7-10. The two groups would offer an equivalent number of utterances in category 3, division of labor and task implementation contributions.

Findings. HPO and LPO groups produced significantly different message frequencies in four of the ten categories (Table 2).[17] Specifically, HPO group members presented more statements than did LPO discussants which summarized interaction and linked contributions to group goals, which attempted to clarify procedural direction, and which introduced topic changes with a general heading. Moreover, HPO individuals elaborated and continued discussion longer than did LPO participants on topic areas prefaced with a category label. These findings were consistent with predictions about HPO groups, but an examination of mean frequencies for categories 7 through 10 demonstrated that LPO groups produced fewer utterances in all of the categories (Figure 1). In this study, then, the GPOQ effectively predicted message patterns of HPO but not of

LPO discussants. Furthermore, t-tests on the mean frequencies for structured and unstructured tasks revealed no significant differences on the ten categories for either HPO or LPO groups. Task structure, then, did not provide an explanation for the procedural characteristics of LPO members.

To discern message sequence patterns of HPO and LPO participants, 10 x 10 matrixes of category interacts were constructed and twelve multiple t-tests between HPO and LPO groups were conducted on the cells which contained frequency counts above 20. Again, the results of this procedure evinced the type of interact patterns that typified HPO but not LPO groups.

As Table 3 shows, HPO individuals produced significantly more contributions about group goals which were followed by additional comments about group purpose. Thus, HPO members not only offered more goal clarification messages than did LPO discussants but also elaborated on these statements. HPO participants, unlike LPO ones, moved the group from discussion of topics initiated by general headings to goal clarification messages--a procedural pattern which tended to unify and systematize the content of interaction.

Investigation #3

Procedures. A third study on the predictive validity of the GPOQ employed procedures similar to those used in the previous investigation. However, 299 upper-division students in communication classes at a midwestern university completed the GPOQ. From this sample, 13 HPO three-person groups and 13 LPO three-person groups were formed, thus 78 subjects were included in the third experiment.

Students were asked to function as ad hoc social groups for a campus organization. Their specific assignment was to plan a party and report their recommendations to their respective organizations. They were given a budget of $75 to cover 30 club members and were asked to complete their task within fifteen minutes.[18] Coders applied the category system used in the second investigation, but coded from audio tapes rather than transcripts of interaction. Scott's Pi reliability coefficient for the two trained coders was .75.

Findings. There was a significant difference between HPO and LPO groups on three of the ten categories, three which did not yield differences in the second study. HPO discussants offered more statements on deadlines, agendas and lists of alternatives than did LPO members while LPO groups employed more talk-overs, interruptions and multiple conversations. In addition, LPO participants switched topics via chain-association patterns more frequently than HPO subjects did. The third experiment, in effect, disclosed message patterns which characterized LPO groups and which were congruent with expectations derived from the GPOQ. Although findings for the other categories were not statistically significant, the mean frequencies of HPO and of LPO participants were in the predicted direction for nine of the ten categories (See Figure 2).

Matrices of interact sequences were prepared for HPO and for LPO groups in this study. Multiple t-tests on eighteen cells which contained total frequencies above 20 yielded significant differences between HPO and LPO subjects on three interact patterns. As Table 3 illustrates, two patterns that LPO discussants produced more often than HPO members did were: moving from comments about procedural direction to

topic changes via specific details and utilizing topic changes to return to task discussions after digressions from socio-emotional issues. Task communication in the LPO work environment, it seemed, eased into and out of socio-emotional issues through the use of specific details as transitions from one topic to another. HPO participants, in contrast, offered contributions which advanced from discussion of group goals to introduction of topic changes via general headings. Hence HPO members integrated subject matter changes into group interaction through the use of general headings and through references to group goals.

Summary and Conclusions

Results of these three studies support the GPOQ's power to predict the type of procedural messages in HPO and LPO groups. Analysis of interaction across six group meetings demonstrate that HPO participants initiate HPO statements, particularly those which call for planned, sequential patterns for organizing task activity. Moreover, these procedural messages are prevalent during the forth meeting and during five-member participation. LPO members, on the other hand, generate socio-emotional statements, especially during the forth meeting and during five-member participation.

In the second study HPO discussants surpass LPO ones in their use of procedural clarification acts, in their application of summaries and goal-related statements, and in their reliance on general headings to introduce new topic areas. In contrast, in the third study, LPO subjects employ a high frequency of interruptions, multiple-conversations, and topic changes which evolve from specific details, whereas HPO members

produce messages that pertain to agendas, lists of alternatives, and task deadlines.

One issue which surfaced during this research and remains unresolved is the saliency of predispositions for HPO and LPO work environments. Although results of the three predictive validity studies corroborate a relationship between attitude and verbal behavior, the potency of HPO and LPO predispositions may depend upon contextual factors in a group process. The fact that both HPO and LPO groups in the first experiment generated an equivalent number of LPO messages, that HPO groups in the second project employed more category 7-10 statements than LPO groups did, and that LPO messages seemed more dominant in the third study suggests that an individual's predisposition for a particular work climate may be superseded by other needs which are more potent at a given time. That is, preference for procedural order in groups, in relation to other members needs, may not be a salient drive or other concerns in a group's development, e.g., task difficulty, time parameters for working on a task, leadership emergence, may mediate a person's attempts to promote certain work habits within the group. In the second experiment, independent raters judged both the structured and the unstructured task as moderately difficult, M = 4.6 and in the third study, independent raters assigned a 3.5 difficulty rating to the party task. However, participants in the third experiment viewed the party planning task as easy, HPO M = 1.9, LPO M = 2.1. Thus, discrepancies in task difficulty between the two studies might account for the shift in predominance from HPO to LPO message patterns between the two experiments.

Another explanation for discrepancies in the potency of the two climates is the belief that HPO behaviors are less invariant than LPO ones. Therefore, if a category system is more sensitive to the overt message patterns of HPO characteristics, the dominance of HPO patterns may be an artifact of the measurement method.[19] The results of the third investigation cast doubt on this assumption but the coding system employed in this research does not tap group actions as responses to member behavior; hence it excludes a critical variable in the composition of an LPO climate--flexibility in changing procedures. Additional support for the steadfastness of HPO behaviors is Wiseman's finding that particular members of HPO groups regularly initiate procedural messages while LPO participants diffuse contributions on work habits from member to member.

Preference for procedural order as a communicative-based construct refers to a predisposition for group work norms characterized by two sets of procedural message patterns: high procedural order and low procedural order. Factor analysis of the GPOQ suggests that these two sets are not mutually exclusive, in that a given group may incorporate aspects of both types of work climates. This research, however, substantiates the premise that some individuals have strong predispositions for either high or low procedural climates. The properties or characteristics of each climate refer to the type of message patterns which tends to dominate that group's work habits. The inverse of these properties then is not necessarily the work habits of the other climate. That is, an LPO pattern of emphasizing flexibility and vacillation between task and socio-emotional issues does not infer that HPO members are inflexible and anti-social. It does imply, however, that other climate factors, i.e.,

use of agendas, task lists, deadlines, are more prevalent than concerns with flexibility and socio-emotional issues.

Conceptually, then HPO and LPO work environments are characterized by a set of behavioral phemenona which integrates cognitive processes for organizing a task with expectations about group process. In effect, the properties act collectively to form an HPO or an LPO work climate; consequently to claim that HPO discussants are simply task-oriented while LPO members are socio-emotionally oriented misrepresents the complex dynamics of work habits and procedural activities in task groups. Moreover, since it is probable that variations of HPO and LPO work habits become normative within a group, both types of climates are considered orderly and routinized, one is a more visible, systematic pattern while the other is a covert chain-associative manner of organizing task behaviors. 'Order,' in this sense, refers to redundancy and repetition of behaviors over time.[20]

Future research on procedural order should concentrate on the relationship between the GPOQ and other group-related variables such as leadership, consensus, conflict-flight patterns, and decision making. To conduct such research, the coding system employed in this study needs to incorporate message units linked to specific group actions and to determine functions and interdependence of procedural order by examining the message structure and redundancy patterns embedded within a sequence of utterances.

In addition to interaction analysis research, the GPOQ could be used in a temporal model to study the evolution of work norms in group development. Knowledge of group member predispositions for work environments

could aid researchers in tracing this development and in understanding its impact on group cohesiveness and productivity. Previous research on norm development in groups centers on power relationships, social approval motivation, collective self-interests and social deviancy.[21] Although these approaches produce insights about the obligatory effects of norms, they provide incomplete explanations as to how norms evolve through group process, and in particular, how message patterns lead to uniform yet binding group member work behavior.

Initial research on work procedures in small groups centers almost exclusively on the use of an orderly, step-by-step outline for solving a problem. In previous research, agendas are linked to decision making rather than to the modus operandi of a task group.[22] This investigation, in contrast, espouses the position that task procedures evolve from within the group and may be characterized, to some extent, by the predispositions of its members. This study then presents an alternative for examining a group's task process, in that it broadens the traditional definitions of work procedures, conceptually and operationally, by setting forth a system of characteristics and categories which represent different orientations toward group work climates and by developing an instrument which attempts to measure these diverse orientations.

FOOTNOTES

[1]Ernest G. Bormann, Discussion and Group Methods: Theory and Practice (New York: Harper and Row, 1975), pp. 159-162.

[2]John Dewey, How We Think (New York: D. C. Heath and Co., 1933) and C. Kepner and B. Tregoe, The Rational Manager: A Systematic Approach to Problem Solving and Decision Making (New York: McGraw-Hill, 1965).

[3]See, for example, John K. Brilhart and L. M. Jockem, "Effects of Different Patterns on Outcomes of Problem-Solving Discussion," Journal of Applied Psychology, 48 (1964), 175-179; Charles H. Pyron, "A Quantitative Study of Reflective Thinking and Performance in Problem Solving," Journal of Communication, 13 (1963), 46-53 and Ovid L. Bayless, "An Alternate Pattern for Problem-Solving Discussion," Journal of Communication, 17 (1967), 188-197.

[4]See Harold Zelko, The Business Conference: Leadership and Participation (New York: McGraw-Hill, 1969).

[5]Aubrey B. Fisher, Small Group Decision Making: Communication and the Group Process (New York: McGraw-Hill, 1970).

[6]See, for example, J. D. Martin, "Social Interaction and the Formation of Restriction of Output Norms," Pacific Sociological Review, 14 (1971), 118-126.

[7]Linda L. Putnam, "Construction and Testing of a Questionnaire to Assess an Individual's Preference for Procedural Order in Small Task-Oriented Groups," Diss. University of Minnesota, 1976.

[8]See David M. Berg, "A Thematic Approach to the Analysis of the Task-Oriented Group," Central States Speech Journal, 28 (1967), 285-291; Robert F. Forston, "The Decision-Making Process in the American Civil Jury: A Comparative Methodological Investigation," Diss. University of Minnesota, 1968; and Lillian A. Ryberg, "A Comparative Study of Small Group Discussion in Native and Target Languages," Diss. University of Minnesota, 1974.

[9]Marvin Shaw, Group Dynamics: The Psychology of Small Group Behavior (New York: McGraw Hill, 1971).

[10]The mean raw score of the 876 students in the normative sample was 160 with a standard deviation of 17.9. Thus, subjects with raw scores above 177.9 were classified as HPO whereas students with raw scores below 142.1 were grouped as LPO. In the normative sample of 876 subjects, 140 or 16% fit into the HPO category while 150 subjects or 17% were classified as LPO. See Putnam, pp. 91-95.

[11]Those who develop category schemes traditionally follow guidelines of mutual exclusivity and exhaustiveness. Although this coding system classifies all behavioral units into two mutually exclusive categories, HPO and LPO, it treats the properties of HPO and of LPO as mixed categories. Even though simultaneous multiple-coding causes problems in data analysis, it provides the full richness of behavioral responses for examining HPO and LPO message patterns. For a discussion of uses and abuses of mixed categories, see Harold Guetzkow, "Unitizing Data," Journal of Clinical Psychology, 6 (1960), 47-57; and Donald G. Ellis, "Issues in Analyzing Sequential Interaction Data: A Plea for Rigor in Matters of Observation," paper presented at the Speech Communication Association, Washington, D.C., December, 1977.

[12]Laura Crowell and Thomas Scheidel, "Categories for Analysis of Idea Development in Discussion Groups," Journal of Social Psychology, 54 (1961), 155-168.

[13]The researcher collapsed the six time periods into three: 1st and 2nd meetings, 3rd and 4th meetings, 5th and 6th meetings, and the 5 member situations into three: 1 and 2 members, 3 members, 4 and 5 members. Then she ran X^2 statistics on the frequencies of each message property for HPO and LPO groups. If a significant X^2 was obtained, the researcher partitioned the X^2 tables to determine which cells in the contingency table contributed significantly to the discrepancies between groups. See John N. Castellan, Jr., "On the Partitioning of Contingency Tables," Psychological Bulletin, 64 (1965), 330-358.

[14]Note that the category labels are derived through the message patterns of group members and not from a pre-set agenda. In effect, the cognitive processes of members are attuned to organizing discussion via general headings versus specific facts.

[15]Marvin E. Shaw, "Scaling Group Tasks: A Method for Dimensional Analysis," Technical Report No. 1, ONR Contract NR 170-266. Nonr-580C11 (Gainesville: University of Florida, 1963).

[16]Holsti, pp. 139-140.

[17]Multiple t-tests were used to check for differences in mean category frequencies for HPO and LPO groups. Although some statisticians treat frequency counts as nominal data, others contend that means and standard deviations of frequency data are appropriate measures. See Jum C. Nunnally, Psychometric Theory, (New York: McGraw-Hill, 1967), pp. 113-114. Moreover, the ten categories are not fully independent; thus with alpha set at $p < .05$; it is probable that some significant differences will occur by chance. I decided that the Bonferroni procedure, an admittedly conservative method of reducing Type II error, was inappropriate for the exploratory purpose of this investigation.

[18]An independent group of 52 subjects rated the party-planning task in accordance with Shaw's eight categories of task analysis. Mean ratings on a seven-point scale for each category were: Difficulty 3.5,

Solution Multiplicity 3.9, Goal-Path Multiplicity 4.0, Decision Verifiability 5.0, Intrinsic Interest 5.7, Cooperation Requirements 5.7, Intellectual Manipulation 5.1, and Population Familiarity 6.0. Thus independent raters viewed the task as moderately easy, relatively structured, and high in interest value. See Shaw, "Scaling Group Tasks," pp. 3-8.

[19]Wiseman used Bales IPA to conduct an in-depth study of six sessions of a five-member group. His findings suggested that the IPA categories were slanted toward HPO group functions. Richard L. Wiseman, "Further Considerations of the Construct of Procedural Order," unpublished manuscript, Department of Speech-Communication, University of Minnesota, 1977.

[20]This conceptualization of 'order' stems from Barron's description of disorder as a state of order which is not clearly developed in a normative framework or which violates the normative assumptions for order in a particular context. For instance, an adult who examines a room in which a child has been playing may consider the area messy and disorderly, but to the child, the room is quite orderly, in terms of objects assembled for play. See Frank E. Barron, "The Need for Order and Disorder as Motives in Creative Activity," in Scientific Creativity: Its Recognition and Development, ed. Calvin W. Taylor and Frank E. Barron (New York: John Wiley & Sons, 1963), p. 154.

[21]See Richard M. Emerson, "Power-Dependence Relations," American Sociological Review, 27 (1962), 31-41; George C. Homans, Social Behavior: Its Elementary Forms (New York: Harcourt, Brace and Co., 1960); Stanley Schachter, "Deviation, Rejection and Communication," Journal of Abnormal and Social Psychology, 46 (1951), 190-207; and Muzafer Sherif, "Formation of Social Norms: The Experimental Paradigm," in Basic Studies in Social Psychology, ed. Harold Proshansky and Bernard Seidenberg (New York: Holt, Rinehart and Winston, 1965).

[22]See Harnack and Fest, pp. 137-145; and Carl E. Larson, "Forms of Analysis and Small Group Problem-Solving," Speech Monographs, 36 (1969), 452-455.

Table 1

Properties of Procedural Messages:
Frequencies, Percentages, and Differences Between HPO and LPO Groups

HPO Properties Total N = 276	N	% of HPO Messages	HPO GROUP N = 168	LPO GROUP N = 108	X^2 df = 1
1. Use of Planned, Sequential Patterns for Organizing Task Activities	92	33%	62	30	5.44*
2. Concern for Time-Management	30	11%	16	14	.33
3. Emphasis on Regular, Predictable Procedures	84	30%	50	34	.02
4. Emphasis on Clarifying Group Procedures and Reminding Members to Adhere to the Task	70	25%	40	30	.17
LPO Properties Total N = 169	**N**	**% of LPO Messages**	**HPO GROUP N = 68**	**LPO GROUP N = 101**	**X^2 df = 1**
1. Use of Chain-Association or Cyclical Pattern	32	19%	18	14	2.81
2. Flexibility in Establishing and Changing Plans	78	46%	36	42	1.21
3. Oblivious to Time Constraints	19	11%	6	13	.67
4. Vacillate Between Task and Socio-Emotional Needs	40	24%	8	32	12.32**

Total N for HPO and LPO Properties = 445

* $p < .02$
** $p < .0005$

Table 2

Differences Within Categories Between HPO and LPO Groups

Category	2nd Investigation HPO Mean f	2nd Investigation LPO Mean f	2nd Investigation t	3rd Investigation HPO Mean f	3rd Investigation LPO Mean f	3rd Investigation t
1. Requests or suggests deadlines, agendas, task lists or ranking of alternatives	5.67	.33	2.05	2.15	.92	2.30**
2. Requests or makes statements about group goals; suggests a signpost at the beginning of group meeting; summarizes and integrates contributions	49.73	10.00	9.15***	10.2	9.50	.43
3. Suggests or requests division of labor; suggests implementation of a task or a course of action	2.00	1.00	.613	4.15	3.76	-.15
4. Requests procedural direction; questions and comments which attempt to clarify specific procedures	34.70	13.70	2.54*	2.61	2.76	-.70
5. Changes task-related topic of discussion by introducing an abstract label or general heading	20.00	7.67	3.59*	9.54	7.92	1.35
6. Continues task-related discussion initiated by a general heading or agenda category	81.00	15.70	3.40**	24.20	15.00	1.67
7. Changes task-related discussion by switching topics via jumping from specific detail to specific detail	33.33	22.67	1.27	10.74	14.52	-2.14*

Table 2 (Continued)

8.	Continues task discussion initiated by a topic change via specific details	48.70	39.02	.64	25.93	35.89	-1.31
9.	Introduces a digression from task to socio-emotional issues				19.84	20.34	-.05
10.	Initiates an interruption, a talk-over, or another conversation while a member is speaking	[a]7.67	3.67	1.39	.23	2.62	-2.24*

*p < .05
**p < .02
***p < .001

[a]In the second investigation, frequency counts for categories 9 and 10 were combined because category 9 contained only 7 utterances.

Table 3

HPO and LPO Differences in Interact Sequences

Pattern	HPO Mean f	LPO Mean f	t	p
2nd Investigation (N = 30, N Groups = 6)				
2, 2	19.0	1.7	3.03	.03
6, 2	7.7	0.0	11.50	.0001
6, 6	57.0	10.7	2.92	.04
5, 6	13.3	4.7	2.71	.05
3rd Investigation (N = 78, N Groups = 26)				
2, 5	1.70	.53	2.94	.007
4, 7	.38	1.15	-2.11	.04
9, 7	.54	1.38	-1.92	.05

Figure 1

Investigation #2: Mean Frequencies of HPO and LPO Groups on PO Categories

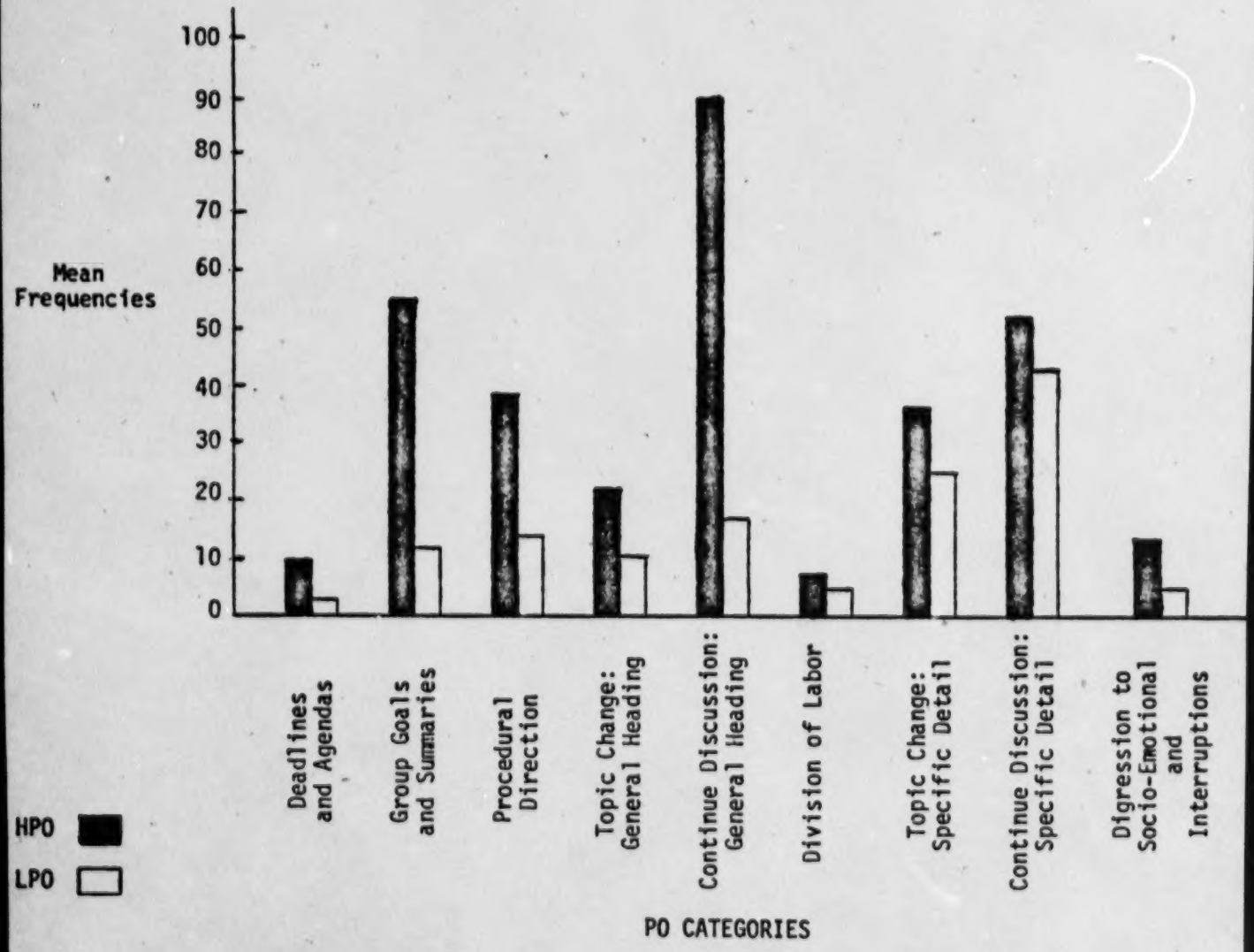

Figure 2
Investigation #3: Mean Frequencies
of HPO and LPO Groups on
PO Categories